HiTerm

Terminal Emulation Program

User Manual

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1 Introduction

HiTerm Terminal Emulator™ is a VT-100 terminal emulation program that runs on IBM PC/XT/AT (or compatible) computers and the NEC PC-9800 family of PCs. HiTerm allows the PC to act like a VT-100 terminal and allows you to communicate with, and exchange files with, other computers or machines (such as Data I/O programmers).

Features

HiTerm is easy to use and provides the following capabilities:

- Supports the programmer's High Speed Download feature (115.2K baud), which can greatly reduce download times for large files if HiTerm is run on a 286, 386, 486, or Pentium PC.
- Allows you to control a Data I/O programmer from any IBM or NEC PC or compatible.
- Allows you to perform file transfer operations between the programmer and the host PC without leaving the programmer's menus.
- Supports 8-bit data transfers, which permit users to transfer binary files quickly and efficiently using any of the binary data formats supported by a Data I/O programmer.
- Supports software handshaking (Xon/Xoff) for flow control.

HiTerm has two operating modes, General (G) and Programmer (P).

- General mode allows HiTerm to perform like a VT-100 terminal. Use General mode when you wish to transfer files between a host computer and a PC.
- Programmer mode, in addition to its terminal emulation capability, automatically opens and closes files when transferring data files between a PC and a UniSite™, 2900, 3900, AutoSite™, or ProMaster® 2500. This mode also supports high speed download operations. Choose Programmer mode when using a UniSite, 2900, 3900, AutoSite, or ProMaster 2500.

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*Note: All references to **programmer** refer to UniSite, 2900, 3900, AutoSite, or ProMaster 2500. Use Programmer mode not General mode,to control these programmers.*

Contents of HiTerm Disk

program.bat	Batch file used to invoke HiTerm in Programmer mode
prg4800.cfg	Configuration file (Programmer mode, 4800 baud)
prg9600.cfg	Configuration file (Programmer mode, 9600 baud)
prg19200.cfg	Configuration file (Programmer mode, 19200 baud)
general.bat	Batch file used to invoke HiTerm in the General mode
gen4800.cfg	Configuration file (General mode, 4800 baud)
gen9600.cfg	Configuration file (General mode, 9600 baud)
gen19200.cfg	Configuration file (General mode, 19200 baud)
hiterm.exe	Terminal emulator program
manual.doc	Documentation for HiTerm
sample.dat	Practice file for transferring files between the PC and the programmer and for editing files. Note that this practice file contains intentional typing errors which you can correct with the programmer editor.

2 *Installation*

HiTerm is provided on a 1.44 MB high density 3-1/2 inch disk in IBM format. You can run HiTerm from a floppy or hard disk.

On a Floppy Drive

Follow the steps below to make a backup copy of HiTerm.

1. Make a working copy of the HiTerm disk by using the DOS COPY *.* command. If you have questions, consult your DOS manual.
2. Save the original disk as a master.
3. Proceed to Chapter 3, "Operation."

On a Hard Drive

Follow the steps below to install HiTerm on your hard disk.

1. Copy all the files from the HiTerm disk to the hard disk in any subdirectory you choose.
2. Modify the **autoexec.bat** file in the root directory of the hard disk so the PATH points to the subdirectory where the HiTerm files reside (if it doesn't already point there). For more information regarding the path command, refer to your DOS manual.

Modify program.bat File

3a. If you are using HiTerm in Programmer mode, edit the **program.bat** configuration file to reflect the location of the configuration files. Edit the two lines that invoke HiTerm so they point to the drive and subdirectory containing the HiTerm files. Refer to the following example.

Note: Bold print indicates the portion that may be modified.

Original program.bat File

```
echo off
Rem: HITERM will use the configuration filename from command line if present.
If not (%1) == () HITERM %1

Rem: HITERM will use PRG9600.CFG if no configuration file is specified.
If (%1) == () HITERM PRG9600.CFG
```

Modified program.bat File

```
echo off
Rem: HITERM will use the configuration filename from command line if present.
If not (%1) == () HITERM C:\UTIL\%1

Rem: HITERM will use PRG9600.CFG if no configuration file is specified.
If (%1) == () HITERM C:\UTIL\PRG9600.CFG
```

Modify general.bat File

3b. If you are using HiTerm in General mode, edit the **general.bat** file to reflect the location of the configuration files. Edit the two lines that invoke HiTerm so they point to the drive and subdirectory containing the HiTerm files. Refer to the following example. (This step is not necessary if you will not be using HiTerm in General Mode.)

Note: Bold print indicates the portion that may be modified.

Original general.bat File

```
echo off
Rem: HITERM will use the configuration filename from command line if present.
If not (%1) == () HITERM %1

Rem: HITERM will use GEN9600.CFG if no configuration file is specified.
If (%1) == () HITERM GEN9600.CFG
```

Modified general.bat File

```
echo off
Rem: HITERM will use the configuration filename from command line if present.
If not (%1) == () HITERM C:\UTIL\%1

Rem: HITERM will use GEN9600.CFG if no configuration file is specified.
If (%1) == () HITERM C:\UTIL\GEN9600.CFG
```

4. Installation is now complete. Reboot your system.

3 *Operation*

You can run HiTerm in Programmer (P) mode or General (G) mode. Use Programmer mode if you are using HiTerm with a UniSite, 2900, 3900, AutoSite or ProMaster 2500. Use General mode when you are using a PC to communicate with other Data I/O programmers or with another computer.

Running HiTerm in Programmer Mode

From a Floppy Disk

To run HiTerm from drive A, place the HiTerm disk in drive A and enter **A:** ↵ . Next enter **program** ↵ .

HiTerm will be invoked using the **prg9600.cfg** configuration file. If you want to use a different configuration file, enter the configuration filename following the word **program**. (If you enter **program prg19200.cfg** ↵ , HiTerm will be invoked using the **prg19200.cfg** file.)

If you want to execute HiTerm from a drive other than the one you are on, or from a subdirectory, you must set the DOS path variable to point to where HiTerm resides. You must also modify the **program.bat** file to point to the location of the configuration files. Refer to Chapter 2 and the instructions for installing HiTerm on a hard disk for more information on editing the **program.bat** file.

From a Hard Disk

After you have installed the HiTerm files on your hard disk, simply enter **program** ↵ to start HiTerm in Programmer mode. When you start HiTerm, it reads a configuration file to set the operating mode (General or Programmer) and to set the various communication port parameters, such as baud rate, parity, and com port. To run HiTerm at a different baud rate, enter the appropriate configuration filename on the command line following the Program command. For example:

- If you enter **program prg19200.cfg,** HiTerm will be invoked using the **prg19200.cfg** configuration file, and HiTerm will run at 19200 baud on Com1.

- If a configuration file is not specified after you enter **program**, the **program.bat** batch file will use the **prg9600.cfg** file by default, and HiTerm will run at 9600 baud on Com1.

If you want to execute HiTerm from a drive other than the one you are on, or from a subdirectory, you must set the DOS path variable to point to where HiTerm resides. You must also modify the **program.bat** file to point to the location of the configuration files. Refer to Chapter 2 and the instructions for installing HiTerm on a hard disk for more information on editing the **program.bat** file.

Running HiTerm in General Mode

This mode is not recommended if you are using a UniSite, 2900, 3900, AutoSite or ProMaster 2500. Use Programmer mode instead because it provides more capabilities, such as High Speed Download.

From a Floppy Disk

To run HiTerm from drive A, place the HiTerm disk in drive A and enter **A:** ↵ . Then enter **general** ↵ . HiTerm will be invoked using the **gen9600.cfg** configuration file. If you want to use a different configuration file, enter the configuration filename following the word **general**. (If you enter **general gen19200.cfg** ↵ , HiTerm will be invoked using the **prg19200.cfg** file.)

If you want to execute HiTerm from a drive other than the one you are on, or from a subdirectory, you must set the DOS path variable to point to where HiTerm resides. You must also modify the **general.bat** file so that it points to the location of the configuration files. Refer to Chapter 2 and the instructions for installing HiTerm on a hard disk for more information on editing the **general.bat** file.

From a Hard Disk

After you have installed the HiTerm files on your hard disk, simply enter **general** ↵ to start HiTerm in General mode. When you start HiTerm, it reads a configuration file to set the operating mode (General or Programmer) and to set the various communication port parameters (baud rate, parity, com port, etc.). To run HiTerm at a different baud rate, enter the appropriate configuration filename on the command line following the word **general**. For example:

- Entering **general gen19200.cfg** will invoke HiTerm using the **gen19200.cfg** configuration file, which will cause HiTerm to run at 19200 baud on Com1.
- If a configuration file is not specified after the word "general," the **general.bat** batch file will use the **gen9600.cfg** file by default which will cause HiTerm to run at 9600 baud on Com1.

If you want to execute HiTerm from a drive other than the one you are on, or from a subdirectory, you must set the DOS path variable to point to where HiTerm resides. You must also modify the **general.bat** file so that it points to the location of the configuration files. Refer to Chapter 2 and the instructions for installing HiTerm on a hard disk for more information on editing the **general.bat** file.

HiTerm Configuration File

HiTerm uses a configuration file to set various system parameters such as operating mode (General or Programmer), PC type (IBM or NEC), and communication parameters (such as baud rate). If HiTerm is not able to read the configuration file, or if there is an error in the file, a message is printed indicating the error. You will then be prompted to abort HiTerm or to continue. If you elect to continue, HiTerm will use default values for the items specified in the configuration file. See the following page for a list of defaults.

Several configuration files are included on the HiTerm disk; create any additional configuration files you desire. When you create your own configuration file, be sure each line conforms to the specifications shown below. Configuration files allow you to set HiTerm parameters specific to your setup. The first field of each line in the configuration file specifies a particular setup parameter. The order of the lines in the file must be as follows:

- **First Line — Mode.**
  Specify either General (G) or Programmer (P). You can use upper- or lowercase; only the first character of the word is significant.
- **Second Line — Baud Rate.**
  The complete number is required. For example, use 9600, not 96.
- **Third Line — Parity.**
  Specify None, Odd, or Even (N, O, or E). Use upper- or lowercase; only the first character of the word is significant.
- **Fourth Line — Data Bits.**
  Specify 7 or 8.
- **Fifth Line — Stop Bits.**
  Specify 1 or 2.
- **Sixth Line — Com Port.**
  Specify 1 or 2.
- **Seventh Line — PC Type (I = IBM type, N = NEC type, A = automatic detection).**
  This parameter specifies which type of PC you are using (IBM or NEC type). The software can automatically detect the type of PC you are using and configure itself accordingly if this parameter is set to A (default). You can bypass the automatic selection feature by specifying either I for IBM and compatibles, or N for NEC type PCs (PC-9800 family).

Example Configuration File

An example of a configuration file is shown below.

Parameter Field	Comment Field (Not Used By HiTerm)
P	Configuration file for HiTerm. First line is Mode (G or P).
9600	Second line is Baud Rate.
N	Third line is Parity (None, Odd, Even).
8	Fourth line is number of Data Bits per character (7 or 8).
1	Fifth line is number of Stop Bits (1 or 2).
1	Sixth line is the Com Port number (1 or 2).
A	Seventh line is Computer Type (I = IBM or compatible, N = NEC, A = automatic detection).

Note: Comments can follow the first word (or character) as long as they are separated from the word by a space and are contained on that one line. The line must end with a line feed. (A ↵ is optional.)

Baud Rates

HiTerm supports the following baud rates:

50	600	3600
75	1200	4800
110	1800	7200
150	2000	9600
300	2400	19200

HiTerm Default Settings

The following are the factory default settings and are used if no configuration file is present or if HiTerm cannot read the specified configuration file.

Parameter	Factory Default Setting
Mode	P (Programmer)
Baud Rate	9600
Parity	N (None)
Data Bits	8
Stop Bits	1
Com Port	1
PC type	A (Automatic Detection of PC Type)

Transferring Files with HiTerm (Programmer Mode)

A special host command, **transfer**, is used by the programmer to communicate with HiTerm. Follow the steps below to either upload or download files. The files will be opened and closed automatically on the PC at the appropriate times.

Upload

1. On the More commands/Transfer data/Upload menu of the programmer, make sure the Destination field reflects the correct programmer serial port, Terminal (T) or Remote (R).

2. In the Upload host command field at the bottom of the screen, enter **transfer** ***filename*** ↵ or alternately, **tr** ***filename*** ↵ . To enter the parameter, enter another ↵ to perform the upload.

Download

1. On the More commands/Transfer data/Download menu of the programmer, make sure the Source field reflects the correct Programmer serial port, Terminal (T) or Remote (R).
2. In the Download host command field at the bottom of the screen, enter **transfer** ***filename*** ↵ or, alternately, **tr** ***filename*** ↵ . At this point the parameter is entered. Enter another ↵ to perform the download.

If you are using General (G) mode, refer to the HiTerm Help screen for the key assignments regarding sending files to or from the PC. High Speed Download is not available in General mode.

High Speed Mode

General Information

HiTerm supports high speed downloads at 115.2K baud. This can greatly reduce download times for large files if HiTerm is run on a 286, 386, 486, or Pentium PC. The PC translates the data and then sends it to the Com port.

Note: High speed data transfers may result in lost data if HiTerm is used through Windows.

The download speed is affected primarily by two factors: speed of the processor in the PC and format of the data in the file to be downloaded. Since the PC will be translating the data, a faster processor will translate data and supply data to the Com port at a faster rate. The file format affects the speed because some formats require less time to translate (such as binary formats).

When a high speed download occurs, data will be transferred at 115.2K baud regardless of the type of processor involved. However, slower processors may not supply the data to the Com port at the rate required to maintain a continuous flow of data to the programmer. Consequently, the download time will be slower even though the baud rate is 115.2K baud. To benefit from the high speed download feature, run HiTerm on a PC at least as powerful as a 6 MHz 286.

During a high speed download, the PC translates the data in the user's file from its original format into an internal format required by the programmer. The formats currently supported by HiTerm for high speed downloads are listed below.

Note: The use of U and E fields in JEDEC format is not supported for high speed download. Do not use high speed download if your file contains U or E fields.

Format Name	Format Number
Binary	10
Intel Intellec 8/MDS	83
Intel MCS-86 Hex Object	88
Intel Hex-32	99
JEDEC (Full)	91
JEDEC (Kernel)	92
Motorola EXORcisor	82
Motorola EXORmax	87
Motorola 32-bit (S3 record)	95

Performing a High Speed Download

Use the following procedure to perform a high speed download.

1. From the More commands/Configure system/Edit/Serial I/O parameters screen, ensure that the baud rate for the Remote port matches that of the Terminal port.
2. Go to the More commands/Configure system/Edit/Communication parameters screen.
3. Set the User Menu Port parameter to R (Remote). If it already indicates **R**, proceed to Step 6.
4. Enter ↵ in response to the following message:

   ```
   Hit return to switch user menu port ,^Z to abort.
   ```

5. Move the cable currently on the Terminal port of the programmer to the Remote port.
6. Set the high speed download parameter to **Y**.
7. Go to the More Commands/Transfer/Download screen.
8. Set the Source field to R (Remote).
9. Select the appropriate I/O translation format. You must use one of the formats currently supported by HiTerm to perform a high speed download. Otherwise, the transfer occurs at the normal baud rate.
10. To initiate the transfer, in the Download Host Command field, enter **transfer** ***filename*** ↵ or, alternately, **tr** ***filename*** ↵ .

Note: The Host command cannot exceed 25 characters

When you start the high speed download, the following message is displayed on the programmer screen:

```
Transferring data in high speed mode
```

When this message appears, the programmer and HiTerm will automatically switch baud rates to 115.2K baud and perform the data transfer. When the transfer is complete, the baud rates are restored to their original rates and a message is displayed indicating the operation is complete.

If the format number you have selected is not one of those supported for high speed download, the message

```
Transferring data
```

is displayed and the transfer occurs at the normal baud rate.

CAUTION: ***Do not remove or insert device modules during high speed download operations.***

4 Commands and Functions

The functions accessible from the Programmer mode Help menus are described below. Since the NEC computers don't have an [ALT] key, you invoke the HiTerm functions using the [CTRL] key with a function key. See Chapter 5 for more NEC-specific operation information.

--------Command----------		
IBM PC	**NEC**	**Function**
[Ctrl] + [R]	[Ctrl] + [R]	Repaints the programmer screen.
[Alt] + [F1]	[Ctrl] + [F1]	Terminates the HiTerm program, returns to DOS, and closes any open files.
[Alt] + [F2]	[Ctrl] + [F2]	Switches between Text mode and Binary mode for transferring files to the Com port. In Text mode the following characters are stripped from the file during transfer: Control-Z, Control-C, Line-Feed, and Nulls. When you transfer a file from the PC to a host while in Text mode, an End-Of-File (EOF) character is sent after the data to indicate the end of the file. In Binary mode, no characters are stripped and no EOF character is sent following the end of the data. Binary mode is the default and is the recommended mode for operation with your programmer.

CAUTION: ***Do not use Text mode to transmit files in JEDEC format or any of your programmer's binary formats, since filtering of control characters may result.***

--------Command---------- IBM PC	NEC	Function
Alt + F3	Ctrl + F3	Displays the HiTerm help screen.
Alt + F4	Ctrl + F4	Displays the current End-Of-File (EOF) character for text mode file transfers. To change the EOF character, enter the hexadecimal value of the desired control character (ASCII 01 through 1F) and press ↵ to select the new character. The default setting is Control-Z (1A Hex). This parameter applies only to text mode. If Text mode is used, the EOF character must match the character selected on the programmer's Communications Parameters screen.

Note: HiTerm operating in Programmer (P) mode automatically closes the file after Upload and Download operations without needing an EOF character.

Alt + F5	Ctrl + F5	Allows you to change directories from within HiTerm. Enter the path for the directory you want to change to. You may also change to a different drive by entering the drive letter followed by a colon (**a:\util**).
Alt + F6	Ctrl + F6	Displays the directory for the drive and path specified.
Ctrl + Break	Ctrl + F10	Sends a Break signal to the Com Port.

The status line at the bottom of the screen displays the current settings of various HiTerm parameters and also indicates how to access the HiTerm help screen: Alt + F3 .

The fields on the status line are described below.

[Caps]	The Caps-Lock key is enabled.
[Num]	The Num-Lock key is in the Number mode.
[Text]	The file-transfer mode is set to Text mode.
[Bin]	The file-transfer mode is set to Binary mode.
[EOF=XX]	Indicates the EOF character (only used for file transfers in text mode).

5 *Messages*

HiTerm messages appear at the bottom of the screen.

Can't change directory

HiTerm was not able to change to the specified directory. Make sure the directory you entered is correct and try again.

Chars lost

HiTerm encountered an error when attempting to close a file during a download operation. Reattempt the download operation.

CTS pin for com port not on

This message applies only to NEC PCs. HiTerm was unable to send data out of the Com port because the Clear To Send (CTS) pin (pin 5) on the port was not being asserted HIGH by the programmer. Either the programmer is not powered on, or pin 5 is not connected in the interface cable. The programmer asserts the required level on this line, but the cable must have pin 5 connected for communication to occur. The cable supplied with the programmer meets this requirement. If pin 5 is not connected in the cable you are using, connect pin 5 (CTS) to pin 20 (DTR) on the PC end of the cable to establish communication.

Data overrun on com port

The UART on the PC received another character before the previous one was read by the processor, causing data to be lost. Try using a slower baud rate or eliminate any background programs currently running on the PC.

Default parameters used

HiTerm was not able to use the information in the configuration file. The default values for the parameters will be used.

EOF not used in Bin mode	You attempted to set the EOF character while in Binary file transfer mode. Since the EOF character is used only for Text mode, change the file transfer mode to Text to use the EOF character.
Error reading line number x in configuration file: "path/filename"	HiTerm encountered an error while reading the line specified. Check the configuration file to ensure it is not corrupted.
File I/O error	HiTerm encountered an error during a file access operation. If this occurred while attempting to send a file from the PC to the Com port, verify that the file actually exists. If this error occurred while transferring data to a file, ensure that enough space exists on the disk to accommodate the data.
File(s) not found	HiTerm was unable to find the file specified. Make sure that the filename entered is correct and try again.
Framing error on com port	The character received at the Com port did not contain a valid Stop Bit. Make sure the baud rates of the PC and the programmer match. If the problem still exists, try using a slower baud rate.
Illegal baud rate specified in configuration file "path/filename"	HiTerm encountered an illegal baud rate in the configuration file. Ensure that the value specified is one of those listed in Chapter 3 as a legal baud rate. If you are using an NEC PC, also refer to Chapter 5.
Illegal com port specified in configuration file "path/filename". Com port 2 not supported for NEC computers.	HiTerm supports either Com1 or Com2 on IBM type PCs. For NEC type PCs, only Com1 is supported.
Illegal parameter in configuration file: "path/filename" line number: x	HiTerm detected a syntax error on the line number specified in the configuration file. Check the contents of the configuration file used (**prg9600.cfg,** if not specified on the command line) to ensure there are no syntax errors. If you choose to continue, HiTerm will use the default parameters.
Not enough memory for HiTerm	There is not enough free memory available in the PC. HiTerm requires a minimum of 128K bytes of RAM. Remove other programs from memory or add more RAM.
Parity error on com port	The parity of the data received did not correspond with the parity setting of the UART in the PC. Make sure the parity settings in the PC and the programmer are the same.

The configuration file does not contain all of the required parameters. This may be caused by using an old version of the configuration file.

One or more parameters are missing from the configuration file. Verify that the configuration files you are using contain all of the parameters required by HiTerm. A new parameter (PC type) was added to the configuration file in HiTerm Version 3.10. If you are using configuration files that were used with previous versions of HiTerm, you should update them to contain any new parameters.

Transfer Error

HiTerm did not close the file on the PC automatically. Make sure the HiTerm mode is set to Programmer (P). If the mode is correct, try using the pacing delay feature on the programmer, or a slower baud rate.

Unable to close configuration file "path/filename"

HiTerm encountered a file error when attempting to close the configuration file specified. Check the configuration file to ensure it is not corrupted.

Unable to open configuration file "path/filename": (No such file or directory)

HiTerm couldn't find the configuration file indicated. Make sure the configuration file entered is correct and try again.

6 *Troubleshooting*

When you are using HiTerm in Programmer mode and you cannot invoke HiTerm or you are having difficulty with the transfer command, check the following.

1. Invoke the HiTerm Help screen [ALT] + [F3] and make sure the HiTerm operating mode is set to Programmer (P). The mode is specified in the configuration file.
2. Make sure the correct syntax is used on the host command line of the programmer transfer menu when you are using the Transfer command.
3. If the programmer menu is not present or complete on the PC screen, press [CTRL] + [R] to repaint the Programmer menu.
4. Type **program** to invoke HiTerm. Do not type the word **HiTerm**, since doing this will bypass the **program.bat** batch file, which is necessary for invoking the default configuration file if one is not specified on the command line.
5. Make sure the programmer's baud rate matches the HiTerm baud rate. The programmer's factory default setting is 9600 baud.
6. Make sure the programmer is connected to the correct Com port on the PC (default is Com1).
7. If the programmer indicates framing, parity, or overrun errors during high speed downloads, the communication board in your PC may not be able to support data transfers at 115.2K baud. Disable the High Speed Download feature or use a different Com board in your PC.
8. Make sure that the terminal type on the programmer is set to VT-100 (ANSI 3.64). You can check this on the programmer's power-up screen.

7 NEC 9800 Operation Notes

Running HiTerm on the NEC PCs is the same as running it on the IBM (and compatible) type PCs with the following exceptions.

1. Since the NEC PCs don't have the [ALT] key, HiTerm operations are invoked using the [CTRL] key with the function keys.

2. You cannot use baud rate 19200 with some of the NEC PCs. If the frequency of the clock feeding the 8253 timer chip for the serial port in the PC is 2.4576 MHz, then 9600 baud is the fastest baud rate available for that PC. If the frequency is 1.9968 MHz, then HiTerm can be set to operate at 19200 baud. HiTerm will automatically determine which clock frequency is present and then will check that the baud rate specified in the configuration file is a legitimate baud rate for that particular PC. If it is not, an error message appears.

3. The baud rate used for high speed download is also determined by the clock frequency mentioned previously. If the clock frequency is 2.4576 MHz, baud rate 9600 will be used for high speed downloads. If the clock frequency is 1.9968 MHz, baud rate 38400 will be used for high speed downloads.

   Baud rates 9600 and 38400 are the fastest baud rates that can be used for high speed downloads when operating the NEC PCs with UniSite, 2900, 3900, AutoSite or ProMaster 2500. Even though these baud rates are slower than the 115.2K baud rate possible with the IBM type PCs during high speed download, a significant improvement in download times can still be achieved compared with normal speed downloads. This is because the data file is translated into a binary format on the PC prior to the download and consequently fewer bytes need to be transferred to UniSite, 2900, 3900, AutoSite or ProMaster 2500.

4. The interface cable used between the NEC PC and the programmer must have pin 5 (CTS) present in the cable to communicate. (The cable supplied with the programmer meets this requirement.) The UART in the NEC PC requires that pin 5 be asserted HIGH to communicate over the serial port. The programmer will assert the necessary signal on pin 5. If pin 5 is not connected in the cable you are using, you can connect pin 5 to pin 20 (DTR) on the PC end of the cable to establish communication.